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ZOOLOGICAL ABSTRACTS[1]

Bannerman, David A. List of the birds of the Canary Islands, with detailed reference to the migratory species and the accidental visitors. *Ibis*, **1919**, 84–131, 291–321, 457–495, 708–764; **1920**, 97–132, 323–360, 519–569, 1919–1920. Of 61 resident birds, 42 are peculiar to the Canary Islands, and in a few species distinct subspecies occur on different islands of the group. Isolation is considered to be a most important factor in the production of the island races by preventing the swamping effects of interbreeding. The environment, which ranges from desert to fairly moist forest on the different islands, is assumed to cause variations, the fittest of which are fixed by natural selection. Although the discussion of the effects of the environmental factors in the evolution of new forms is not critical the paper is important as an attempt to explain the development of the peculiarities of the bird fauna. L. R. DICE.

Bishop, Sherman C. Notes on the Habits and Development of the Four-toed Salamander, *Hemidactylium scutatum* (Schlegel). *N. Y. State Mus., Bull.* 219, 220—15th Rept. of the Director, 251–282, 7 pls., 1920. This paper is an important addition to our knowledge of the relations between breeding habits and life histories on the one hand and the environment on the other, among the amphibians which have become entirely terrestrial. The eggs are laid in sphagnum moss, and must have an abundant and constant supply of moisture, but will not develop in moss that is kept saturated; "the length of time the gills are retained in larvae reared under artificial conditions depends, to a considerable extent, upon the moisture content of the moss." The number of eggs laid (40 to 60) is large in comparison with the number laid by other terrestrial species in the North American fauna, and there is early absorption of yolk, facts which, with the intimate relation between the eggs and moisture, are interpreted to indicate a recent adaptation to terrestrial life. A. G. RUTHVEN.

Boycott, A. E. The Freshwater Mollusca of the Parish of Aldenham. *Trans. Hertfordshire Nat. Hist. Soc.*, 17, 1–48, pls. 4–9, 1919. This is a careful study of the ecological relationships of the Mollusca inhabiting the ponds and streams of a relatively small area. The effect of foul water, of muddiness, and of chemical matter on the species is well brought out. The relationship of snails to vegetation is ably discussed, a feature usually lacking in most papers on fresh-water mollusks. Tables are given showing the relative abundance of species in closed ponds and in running water. The paper may be studied by ecologists with great advantage. Similar studies would be of value if carried on in some of our own small ponds. F. C. BAKER.

Chidester, F. E. The behavior of *Fundulus heteroclitus* on the salt marshes of New Jersey. *Amer. Nat.*, **54**, 551–557, 1920. The author describes the environmental conditions associated with the tidal and seasonal movements of this killifish in salt marshes, and regards, but does not demonstrate, these conditions to be determinant factors. C. L. HUBBS.

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[1] The purpose of this section is to give brief abstracts of important zoological literature which possesses ecological interest. January 1, 1920, has been selected as the starting point. Material on plants is not included, because already covered in Botanical Abstracts. Critical reviews of outstanding publications bearing on any phase of ecology will be included as heretofore under Reviews. The section of Zoological Abstracts has been made possible by the efforts of Dr. Lee R. Dice, of the University of Michigan, to whom contributors should send abstracts which they wish included.

Reprints of Zoological Abstracts, printed on one side for pasting on cards for bibliographical purposes, may be secured from the Business Manager at a fixed sum per year, which will be about 25 cents.

Cunnington, William A. The fauna of the African lakes: a study in comparative limnology with special reference to Tanganyika. *Proc. Zool. Soc. London,* Part 4, 507–622, 2 figs., 1920. The author gives a complete list of fauna and discusses the distribution of the various forms in the different lakes. Tanganyika has a very large percentage of endemic genera and species. C. JUDAY.

Goldman, Edward A. Mammals of Panama. *Smithsonian misc. coll.,* 69, no. 5, 309 pp., 24 figs., 39 pls., 1920. Describes and maps the distribution of the climatic areas—called life-zones or parts of life-zones—of Panama and gives lists of species of mammals, birds, and plants of each area. L. R. DICE.

Jackson, Hartley H. T. An apparent effect of winter inactivity upon distribution of mammals. *Jour. mammalogy,* 1, 58–64, 1 fig., 1920. Species occurring on the Apostle Islands, Lake Superior, are usually active in winter, while those occurring on the adjacent mainland, but not found on the islands, tend to be inactive in winter. The larger species probably crossed to the islands on the ice, a minimum distance of 1½ miles. The smaller species were probably transported on driftwood, particularly with the ice floes in spring. L. R. DICE.

MacDonald, Rose M. E. An analytical subject bibliography of the publications of the Bureau of Fisheries, 1871–1920. *Bur. Fish. Doc.,* no. 899, 1921. The Bureau of Fisheries has published, often somewhat obscurely, much material of interest to ecologists. This data is made readily available by this carefully compiled and well-classified bibliography. C. L. HUBBS.

Meisinger, C. LeRoy. Notes on meteorology and climatology. Physiological meteorology. *Science,* n. s., 53, 337–339, April 8, 1921. A review of recent literature on the relationship between climate and health in man. L. R. DICE.

Murphy, Robert Cushman. The seacoast and islands of Peru. Pts. I and II. *Brooklyn mus. quart.,* 7, 69–95, 165–187, illus., April and July, 1920. Discusses the effect of ocean currents and related factors on the distribution of life along the Pacific Coast of North and South America. Also considers the effect of ocean temperatures, mountain masses, and direction of the prevailing winds in determining the climatic belts of Peru. L. R. DICE.

Ortmann, Arnold E. Correlation of Shape and Station in Freshwater Mussels (Naiades). *Proc. Amer. Phil. Soc.,* 19, 269–312, 1920. A study of the mussel fauna of streams from headwaters to lower reaches, showing that species vary in both shape, size, and color as the stream increases in size. Studies cover the Ohio and Tennessee rivers. A valuable paper for the ecologist. F. C. BAKER.

Pearse, A. S., and Achtenberg, Henrietta. Habits of yellow perch in Wisconsin lakes. *Bull. Bur. Fish.,* 36 (1917–1918), 295–366, 1920. Probably the best account of the ecology of an American fresh-water fish. Particular emphasis is placed on a study of food and of associational distribution. A bibliography of many titles is appended. C. L. HUBBS.

Thienemann, August. Untersuchungen über die Beziehungen zwischen dem Sauerstoffgehalt des Wassers und der Zusammensetzung der Fauna in norddeutschen Seen. *Archiv. für Hydrobiologie,* 12, 1–65, 24 Kurventafeln, 1920. Gives quantity of dissolved oxygen in various lakes and discusses its relation to distribution of insect larvae and fishes. C. JUDAY.